

intermediate between the highest anthropoid and the highest form of man.

Dr. Smith Woodward fixes its date in the very early Pleistocene period, contemporary with the well-known Heidelberg jaw. Prof. Rutot, of Brussels, assigns the Piltown stratum of gravel in which the remains were found to the latter part of the Pliocene period. If these views be accepted, it is of much earlier date than the remains of Neanderthal man recently discovered in France; and while Prof. Rutot estimates the duration of the Pleistocene period at 150,000 years, Prof. Penck, one of our greatest authorities on the Glacial period, estimates its duration from half a million to a million and a half of years.

On the other hand, Prof. Keith, of the Royal College of Surgeons, has articulated the portion of the skull to represent a large and well-modelled human head with a brain capacity of 1500 c.c.—an amount slightly above the average of modern human brains.

The difficulty of accepting Dr. Smith Woodward's reconstruction is in believing that Eoanthropus could be transformed into modern man in the short period represented by the first half of the Pleistocene period. On the other hand, to quote the admirable summary of the question in *The Times* of August 11, "if Prof. Keith is right, then it is quite possible that mankind may have reached the stage represented by the Galley Hill remains before the middle of the Pleistocene period. If Dr. Smith Woodward is right, we have to seek the beginnings of our modern culture and civilisation at the middle of the Pleistocene period; if his opponent's reconstruction is well founded, we have to go a whole geological period further back—perhaps a million of years—to find the dawn of modern man and his culture."

In the discussion which took place, reported in *The Times* of August 12, the weight of scientific opinion seems to have been decidedly in favour of the views of Prof. Keith. But the importance of the question is so vital to the science of anthropology that we may be well advised to await further developments of the controversy.

HELMINTHS AND CANCER.

IN a memoir recently published,¹ Dr. Johannes Fibiger brings forward strong evidence in support of the view, by no means novel, that the lesions of the tissues produced by parasitic worms may act as the starting-point for the development of cancerous growths and tumours. The author found in wild rats a disease of the œsophagus and stomach characterised by an epithelial proliferation and inflammation leading, in pronounced cases, to a papillomatous growth which was the precursor of a malignant epithelioma. Examination of the primary lesions revealed the presence of a nematode worm, an undescribed species of *Spiroptera*.

From a series of experiments it was concluded that cockroaches (*Periplaneta americana* and *P.*

¹ Oversigt Kgl. Danske Videnskabernes Selskabs Forhandlinger, 1913, No. 1.

orientalis) serve as intermediate hosts for the Spiroptera. The cockroach becomes infected by ingesting eggs of the worm which are passed out in the excrement of the rat; the eggs develop in the cockroach and the embryos of the worm become localised in the striated muscles of the prothorax and the legs. The rats become infected by eating cockroaches, and the embryos of the worm, set free from their cysts, attack the epithelium of the stomach, sometimes also that of the œsophagus or buccal cavity, and develop into the adult nematode, the cause of the lesions already mentioned. From his investigations the author concludes that all the anatomical alterations are due to toxic products of the nematode.

From the primary lesions caused by the nematode secondary metastases may be produced in other organs. The metastases contain neither the parasites nor their eggs. The development of the metastases is ascribed to the faculty of the epithelial cells to multiply in other organs independently of the parasite. The author thus confirms the view put forward by Borrel and others that nematodes may produce malignant tumours in rats and mice, and considers it not improbable that in human pathology also cancerous tumours may owe their origin in some cases to the presence of helminths.

NOTES.

A CIRCULAR from the Institut International de Physique Solvay informs us that a sum of 20,000 francs is available for the encouragement of experimental work in physics and physical chemistry, particularly for investigations on radiation phenomena (Röntgen rays and those of radio-active bodies) and for studies of the theory of energy quanta and of molecular theories. Grants from the fund will be awarded, without distinction of nationality, by the administrative commission of the institute on the recommendation of the international scientific committee. The administrative commission is composed of Profs. P. Heger, E. Tassel, and J. E. Verschaffelt, Brussels, and the scientific committee of M. H. A. Lorentz, president, Haarlem; Mme. M. Curie, Paris; M. Brillouin, Paris; R. B. Goldschmidt, Brussels; H. Kamerlingh-Onnes, Leyden; W. Nernst, Berlin; E. Rutherford, Manchester; E. Warburg, Berlin; and M. Knudsen, secretary, Copenhagen. Applications for grants should be made before September 15 to Prof. H. A. Lorentz, Zijlweg 76, Haarlem, Holland. They should state precisely what problems are to be investigated, the proposed means of inquiry, and the amount required, in order that the committee may have before it all details necessary in considering the awards to be made.

AN exhibit illustrating the damage caused to biscuits sent out in soldered tins for the use of the troops in South Africa—especially during the Boer war—Gibraltar, Malta, Ceylon, &c., has just been placed in the central hall of the British Museum (Natural History), where it will be kept open about a month. The larvæ of certain minute moths and beetles were the active agents; and it appears that since these